Amendments to the Claims:

Please replace all prior versions and listings of the claims with the following amended claims:

1. (Previously Presented) A device for fluid cooled micro-scaled heat exchange, the device comprising:

    a plurality of substantially parallel micro-scaled regions having a fluid inlet side and a fluid exhaust side configured to permit flow of fluid therethrough;

    a plurality of inlet channels, interleaved between the micro-scaled regions and coupled to the fluid inlet side of each micro-scaled region, wherein a direction of fluid flow in adjacent micro-scaled regions is in substantially opposite directions;

    a plurality of exhaust channels, interleaved between the micro-scaled regions and coupled to the fluid exhaust side of each micro-scaled region, wherein the direction of fluid flow at the exhaust side in adjacent micro-scaled regions is in substantially opposite directions; and

    a spreader region, wherein the spreader region comprises a first side and a second side, wherein the first side is positioned on and coupled to [[the]] a heat source, and wherein the second side is coupled to the micro-scaled regions.

2. (Original) The device in Claim 1, wherein the spreader region comprises a thickness dimension within the range of and including 0.3 millimeter to 1.0 millimeters.

3. (Previously Presented) The device in Claim 1, wherein the spreader region and the micro-scaled regions are both wider than the heat source defining an overhang of the heat source, and wherein the plurality of micro-scaled regions overlay the heat source.

4. (Previously Presented) The device in Claim 3, wherein the overhang of the micro-scaled regions is in the range of and including 0.0 millimeters to 15.0 millimeters.

5. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise microchannels, wherein the microchannels comprise walls.

6. (Original) The device in Claim 5, wherein at least one of the microchannel walls has a width dimension within the range of and including 10 microns to 100 microns.

7. (Original) The device in Claim 5, wherein at least one of the microchannel walls has a height dimension within the range of and including 50 microns and 2.0 millimeters.

8. (Original) The device in Claim 5, wherein at least two of the microchannel walls are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

9. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise a micro-porous structure.

10. (Original) The device in Claim 9, wherein the micro-porous structure comprises a porous material with a porosity within the range of and including 50 to 80 percent.

11. (Original) The device in Claim 9, wherein the micro-porous structure has an average pore size within the range of and including 10 microns to 200 microns.

12. (Original) The device in Claim 9, wherein the micro-porous structure comprises a height within the range of and including 0.25 millimeter to 2.0 millimeters.

13. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise micro-pillars.

14. (Previously Presented) The device in Claim 13, wherein the micro-pillars comprise a plurality of pins, wherein at least one of the plurality of pins has a cross sectional area within the range of and including 10 $(\text{micron})^2$ and 100 $(\text{micron})^2$.

15. (Original) The device in Claim 14, wherein at least one of the plurality of pins has a height dimension within the range of and including 50 microns and 2.0 millimeters.

16. (Original) The device in Claim 14, wherein at least two of the plurality of pins are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

17. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise any one of microchannels, a micro-porous structure, and micro-pillars.

18. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise silicon.

19. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise a material with thermal conductivity larger than 25 W/m-K.

20. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise a high aspect ratio micro-machined material.

21. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise semiconducting material.

22. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise precision machined metals.

23. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions comprise precision machined alloys.

24. (Original) The device in Claim 1, wherein the spreader region comprises a material with a thermal conductivity value larger than 120 W/m-K.

25. (Previously Presented) The device in Claim 1, wherein the spreader region is interposed between the micro-scaled regions and the heat source.

26. (Original) The device in Claim 1, wherein the spreader region comprises copper.

27. (Original) The device in Claim 1, wherein the spreader region comprises diamond.

28. (Original) The device in Claim 1, wherein the spreader region comprises silicon carbide.

29. (Original) The device in Claim 1, wherein the heat source is a microprocessor.

30. (Original) The device in Claim 1, further comprising a plurality of manifolding layers coupled to the spreader region.

31. (Original) The device in Claim 30, wherein the plurality of manifolding layers comprise interwoven manifolds.

32. (Original) The device in Claim 31, wherein the plurality of manifolding layers further comprise a plurality of individualized holes for channeling fluid into and out of the device.

33. (Previously Presented) The device in Claim 1, further comprising a plurality of manifolding layers coupled to the micro-scaled regions.

34. (Original) The device in Claim 33, wherein the plurality of manifolding layers comprise interwoven manifolds.

35. (Original) The device in Claim 33, wherein the plurality of manifolding layers further comprise a plurality of individualized holes for channeling fluid into and out of the device.

36. (Previously Presented) The device in Claim 1, further comprising a plurality of fluid paths coupled to the micro-scaled regions, wherein the plurality of fluid paths are configured to receive fluid and permit the flow of fluid therethrough.

37. (Previously Presented) The device in Claim 1, wherein the heat source, the spreader region, and the micro-scaled regions are in a monolithic configuration.

38. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by an anodic bonding method.

39. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by a fusion bonding method.

40. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by a eutectic bonding method.

41. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by an adhesive bonding method.

42. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by a brazing method.

43. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by a welding method.

44. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by a soldering method.

45. (Previously Presented) The device in Claim 1, wherein the micro-scaled regions and the spreader region are coupled by an epoxy method.

46. (Original) The device in Claim 1, wherein the fluid comprises water.

47. (Previously Presented) The device in Claim 1, wherein the fluid comprises any one of water, ethylene glycol, isopropyl alcohol, ethanol, methanol, and hydrogen peroxide.

48. (Previously Presented) A device for fluid cooled micro-scaled heat exchange comprising:

a plurality of substantially parallel micro-scaled regions having a fluid inlet side and a fluid exhaust side configured to permit flow of fluid therethrough, wherein each of the micro-scaled regions has a first width, and a thickness;

a plurality of inlet channels, interleaved between the micro-scaled regions and coupled to the fluid inlet side of each micro-scaled region, wherein a direction of fluid flow in adjacent micro-scaled regions is in substantially opposite directions;

a plurality of exhaust channels, interleaved between the micro-scaled regions and coupled to the fluid exhaust side of each micro-scaled region, wherein the direction of fluid flow at the exhaust side in adjacent micro-scaled regions is in substantially opposite directions; and

a spreader region with a second width and a thickness, wherein the spreader region comprises a first side coupled to a heat source having a heat source width and a second side coupled to the micro-scaled regions.

49. (Previously Presented) The device in Claim 48, wherein the heat source, the spreader region, and the micro-scaled regions are in a monolithic configuration.

50. (Previously Presented) The device in Claim 48, wherein the spreader region and the micro-scaled regions are both wider than the heat source defining an overhang of the heat source, and wherein the plurality of micro-scaled regions overlay the heat source.

51. (Previously Presented) The device in Claim 50, wherein the overhang of the micro-scaled regions is in the range of and including 0.0 millimeters to 15.0 millimeters.

52. (Previously Presented) The device in Claim 48, wherein the micro-scaled regions comprise microchannels, wherein the microchannels comprise walls.

53. (Original) The device in Claim 52, wherein at least one of the microchannel walls has a width dimension within the range of and including 10 microns to 100 microns.

54. (Original) The device in Claim 52, wherein at least one of the microchannel walls has a height dimension within the range of and including 50 microns and 2.0 millimeters.

55. (Original) The device in Claim 52, wherein at least two of the microchannel walls are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

56. (Previously Presented) The device in Claim 48, wherein the micro-scaled regions comprise a micro-porous structure.

57. (Original) The device in Claim 56, wherein the micro-porous structure comprises a porous material with a porosity within the range of and including 50 to 80 percent.

58. (Original) The device in Claim 56, wherein the micro-porous structure has an average pore size within the range of and including 10 microns to 200 microns.

59. (Original) The device in Claim 56, wherein the micro-porous structure comprises a height within the range of and including 0.25 millimeter to 2.0 millimeters.

60. (Previously Presented) The device in Claim 48, wherein the micro-scaled regions comprise micro-pillars.

61. (Previously Presented) The device in Claim 60, wherein the micro-pillars comprise a plurality of pins, wherein at least one of the plurality of pins has a cross sectional area within the range of and including 10 $(\text{micron})^2$ and 100 $(\text{micron})^2$.

62. (Original) The device in Claim 61, wherein at least one of the plurality of pins has a height dimension within the range of and including 50 microns and 2.0 millimeters.

63. (Original) The device in Claim 61, wherein at least two of the plurality of pins are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

64. (Previously Presented) The device in Claim 48, wherein the micro-scaled regions comprise any one of microchannels, a micro-porous structure, and micro-pillars.

65. (Original) The device in Claim 48, wherein the heat source is a microprocessor.

66. (Previously Presented) The device in Claim 48, wherein the micro-scaled regions width is greater than the heat source width.

67. (Previously Presented) The device in Claim 48, wherein the first width is greater than the heat source width and the first width is substantially centered over the heat source width.

68. (Previously Presented) The device in Claim 67, wherein the difference between the first width and the heat source width is in the range of 0.0 millimeter to 15 millimeters.

69. (Previously Presented) The device in Claim 67, wherein the difference between the first width and the heat source width is in the range of 0.0 millimeter to 5.0 millimeters on each side of the heat source when the fluid is single phase.

70. (Currently Amended) The device in Claim 67, wherein the difference between the [[the]] first width and the heat source width is in the range of 5.0 millimeter - 15 millimeters on each side of the heat source when the fluid is two phase.

71. (Previously Presented) The device in Claim 48, wherein the first side further comprises a higher thermal conductivity region coupled to the heat source.

72. (Previously Presented) The device in Claim 48, wherein the spreader region is interposed between the heat source and the micro-scaled regions.

73. (Original) The device in Claim 48, wherein the spreader region comprises copper.

74. (Original) The device in Claim 48, wherein the spreader region comprises diamond.

75. (Original) The device in Claim 48, wherein the spreader region comprises silicon carbide.

76. (Withdrawn) A method for fabricating a fluid cooled micro-scaled heat exchange device comprising:

1. fabricating a micro-scaled region comprising silicon;
2. fabricating a spreader region comprising copper; and
3. coupling the micro-scaled region with the spreader region.

77. (Withdrawn) The device in Claim 76, wherein the spreader region and the micro-scaled region are wider than the heat source, and wherein the micro-scaled region overhangs with respect to the heat source.

78. (Withdrawn) The device in Claim 77, wherein the dimension of the overhang of the micro-scaled region is in the range of and including 0.0 millimeters to 15.0 millimeters.

79. (Withdrawn) The device in Claim 76, wherein the micro-scaled region comprises microchannels, wherein the microchannels comprise walls.

80. (Withdrawn) The device in Claim 79, wherein at least one of the microchannel walls has a width dimension within the range of and including 10 microns to 100 microns.

81. (Withdrawn) The device in Claim 79, wherein at least one of the microchannel walls has a height dimension within the range of and including 50 microns and 2.0 millimeters.

82. (Withdrawn) The device in Claim 79, wherein at least two of the microchannel walls are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

83. (Withdrawn) The device in Claim 76, wherein the micro-scaled region comprises a micro-porous structure.

84. (Withdrawn) The device in Claim 83, wherein the micro-porous structure comprises a porous material with a porosity within the range of and including 50 to 80 percent.

85. (Withdrawn) The device in Claim 83, wherein the micro-porous structure has an average pore size within the range of and including 10 microns to 200 microns.

86. (Withdrawn) The device in Claim 83, wherein the micro-porous structure comprises a height within the range of and including 0.25 millimeter to 2.0 millimeters.

87. (Withdrawn) The device in Claim 76, wherein the micro-scaled region comprises micro-pillars.

88. (Withdrawn) The device in Claim 87, wherein the micro-pillars comprise a plurality of pins, wherein at least one of the plurality of pins has a cross sectional area within the range of and including $(10 \text{ micron})^2$ and $(100 \text{ micron})^2$.

89. (Withdrawn) The device in Claim 88, wherein at least one of the plurality of pins has a height dimension within the range of and including 50 microns and 2.0 millimeters.

90. (Withdrawn) The device in Claim 88, wherein at least two of the plurality of pins are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

91. (Withdrawn) The device in Claim 76, wherein the micro-scaled region is comprised from the group of microchannels, a micro-porous structure, and micro-pillars.

92. (Withdrawn) The method of Claim 76, wherein the micro-scaled spreader region is fabricated from precision machined metals.

93. (Withdrawn) The method of Claim 76, wherein the micro-scaled spreader region is fabricated from precision machined alloys.

94. (Previously Presented) A system for fluid cooled micro-scaled heat exchange comprising:

means for spreading heat having a width and forming a spreader region, wherein the means for spreading heat is coupled to a heat source;

means for supplying fluids; and

means for micro-scaled fluid flow through a plurality of substantially parallel micro-scaled regions configured to receive fluid from the means for supplying fluid, wherein the means for micro-scaled fluid flow produces a fluid flow that is in substantially opposing directions for adjacent micro-scaled regions, and wherein the means for micro-scaled fluid flow is coupled to the means for spreading heat.

95. (Previously Presented) The device in Claim 94, wherein the spreader region and the micro-scaled regions are both wider than the heat source defining an overhang of the heat source.

96. (Previously Presented) The device in Claim 95, wherein the overhang of the micro-scaled regions is in the range of and including 0.0 millimeters to 15.0 millimeters.

97. (Previously Presented) The device in Claim 94, wherein the micro-scaled regions comprise microchannels, wherein the microchannels comprise walls.

98. (Original) The device in Claim 97, wherein at least one of the microchannel walls has a width dimension within the range of and including 10 microns to 100 microns.

99. (Original) The device in Claim 97, wherein at least one of the microchannel walls has a height dimension within the range of and including 50 microns and 2.0 millimeters.

100. (Original) The device in Claim 97, wherein at least two of the microchannel walls are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

101. (Previously Presented) The device in Claim 94, wherein the micro-scaled regions comprise a micro-porous structure.

102. (Original) The device in Claim 101, wherein the micro-porous structure comprises a porous material with a porosity within the range of and including 50 to 80 percent.

103. (Original) The device in Claim 101, wherein the micro-porous structure has an average pore size within the range of and including 10 microns to 200 microns.

104. (Original) The device in Claim 101, wherein the micro-porous structure comprises a height within the range of and including 0.25 millimeter to 2.0 millimeters.

105. (Previously Presented) The device in Claim 94, wherein the micro-scaled regions comprise micro-pillars.

106. (Previously Presented) The device in Claim 105, wherein the micro-pillars comprise a plurality of pins, wherein at least one of the plurality of pins has a cross sectional area within the range of and including 10 $(\text{micron})^2$ and 100 $(\text{micron})^2$.

107. (Original) The device in Claim 106, wherein at least one of the plurality of pins has a height dimension within the range of and including 50 microns and 2.0 millimeters.

108. (Original) The device in Claim 106, wherein at least two of the plurality of pins are separated from each other by a spacing dimension within the range of and including 10 microns to 150 microns.

109. (Currently Amended) The device in Claim 94, wherein the micro-scaled regions comprise any one of microchannels, a micro-porous structure, and micro-pillars.